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CA3161

August 1997

BCD to Seven Segment Decoder/Driver

Features

- **TTL Compatible Input Logic Levels**
- **25mA (Typ) Constant Current Segment Outputs**
- **Eliminates Need for Output Current Limiting Resistors**
- **Pin Compatible with Other Industry Standard Decoders**
- **Low Standby Power Dissipation . . . . . 18mW (Typ)**

Ordering Information

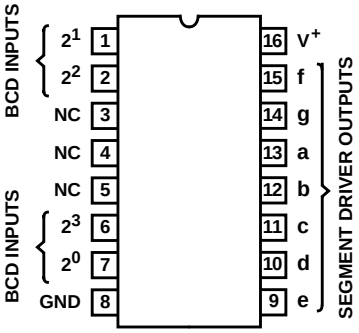
PART NUMBER	TEMP. RANGE (^{O}C)	PACKAGE	PKG. NO.
CA3161E	0 to 70	16 Ld PDIP	E16.3

Description

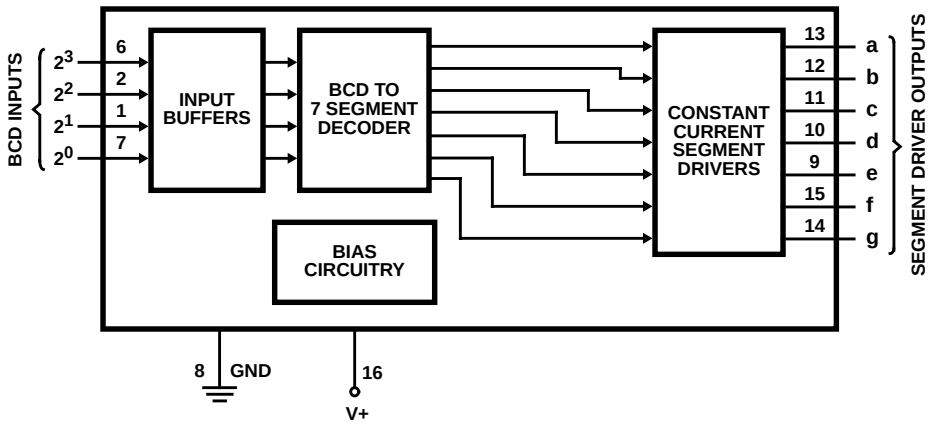
The CA3161E is a monolithic integrated circuit that performs the BCD to seven segment decoding function and features constant current segment drivers. When used with the CA3162E A/D Converter the CA3161E provides a complete digital readout system with a minimum number of external parts.

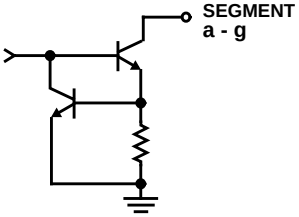
Pinout

CA3161
(PDIP)
TOP VIEW

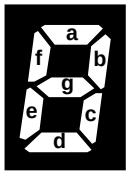


Functional Block Diagram





SEGMENT DRIVER



SEGMENT IDENTIFICATION

CAUTION: These devices are sensitive to electrostatic discharge; follow proper IC Handling Procedures.
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Absolute Maximum Ratings

DC V_{SUPPLY} (Between Terminals 1 and 10) . . . . . +7.0V
Input Voltage (Terminals 1, 2, 6, 7) . . . . . +5.5V
Output Voltage
Output "Off" . . . . . +7V
Output "On" (Note 1) . . . . . +10V

Thermal Information

Thermal Resistance (Typical, Note 2)	θ_{JA} ($^oC/W$)
PDIP Package	100

Maximum Junction Temperature . . . . . 150^oC
Maximum Storage Temperature Range . . . . . -65^oC to 150^oC
Maximum Lead Temperature (Soldering 10s) . . . . . 300^oC

Operating Conditions

Temperature Range . . . . . 0^oC to 75^oC

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

NOTES:

1. This is the maximum output voltage for any single output. The output voltage must be consistent with the maximum dissipation and derating curve for worst case conditions. Example: All segments "ON", 100% duty cycle.
2. θ_{JA} is measured with the component mounted on an evaluation PC board in free air.

Electrical Specifications $T_A = 25^oC$

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNITS
V_{SUPPLY} Operating Range, V^+			4.5	5	5.5	V
Supply Current, I^+ (All Inputs High)			-	3.5	8	mA
Output Current Low (V_O = 2V)			18	25	32	mA
Output Current High (V_O = 5.5V)			-	-	250	µA
Input Voltage High (Logic "1" Level)			2	-	-	V
Input Voltage Low (Logic "0" Level)			-	-	0.8	V
Input Current High (Logic "1")		2V	-30	-	-	µA
Input Current Low (Logic "0")		0V	-40	-	-	µA
Propagation Delay Time,	t_{PHL}		-	2.6	-	µs
	t_{PLH}		-	1.4	-	µs

TRUTH TABLE

BINARY STATE	INPUTS				OUTPUTS							DISPLAY
	2^3	2^2	2^1	2^0	a	b	c	d	e	f	g	
0	L	L	L	L	L	L	L	L	L	L	H	
1	L	L	L	H	H	L	L	H	H	H	H	
2	L	L	H	L	L	L	H	L	L	H	L	
3	L	L	H	H	L	L	L	L	H	H	L	
4	L	H	L	L	H	L	L	H	H	L	L	
5	L	H	L	H	L	H	L	L	H	L	L	
6	L	H	H	L	L	H	L	L	L	L	L	
7	L	H	H	H	L	L	L	H	H	H	H	
8	H	L	L	L	L	L	L	L	L	L	L	
9	H	L	L	H	L	L	L	L	H	L	L	
10	H	L	H	L	H	H	H	H	H	H	L	
11	H	L	H	H	L	H	H	L	L	L	L	
12	H	H	L	L	H	L	L	H	L	L	L	
13	H	H	L	H	H	H	H	L	L	L	H	
14	H	H	H	L	L	L	H	H	L	L	L	
15	H	H	H	H	H	H	H	H	H	H	H	BLANK

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